

AMENDMENT TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

Listing of Claims:

1. - 11. (Canceled)

12. (Currently Amended) A plasma processing apparatus for processing etching a surface of a sample using a plasma generated within a plasma generating portion comprising:

a vacuum chamber enclosing said plasma generating portion to establish a vacuum therein, the vacuum chamber having a flat upper face, an inclined side wall member and a trapezoidal cross section, wherein said inclined side wall member comprises an electrically non-conductive member facing said plasma;

a Faraday shield provided around said inclined side wall member and disposed in a floating position to a ground while said plasma is generated for etching the surface of the sample;

a coil antenna for generating an electric field in said plasma generating portion, the coil antenna being wound around said inclined side wall member and outside of said Faraday shield wherein a direction in which said coil antenna is wound is perpendicular to a slit provided in said Faraday shield;

a radio frequency power source for supplying radio frequency electric power to said antenna;

a gas supply unit for supplying gas into said vacuum chamber;
a sample stage disposed below said plasma generating portion inside said vacuum chamber, on which a sample is placed; and
a discharge unit disposed below said sample stage for discharging the gas [[in]] from a space around said sample stage out of said vacuum chamber wherein, the discharge unit including a discharge outlet from said vacuum chamber, positioned such that there is disposed a path, for discharging the gas, along an inside of said inclined side wall member and said space around said sample stage.

13. (Previously Presented) A plasma processing apparatus according to claim 12 further comprising:

a plate made of a conductor or a semiconductor and placed on an inner side of the upper face of the vacuum chamber.

14. (Previously Presented) A plasma processing apparatus according to Claim 13, further comprising:

a radio-frequency power source applied to said plate so as to apply radio-frequency waves to said plate.

15. (Previously Presented) A plasma processing apparatus according to claim 13, further comprising a DC voltage source applied to said plate so as to supply DC voltage to said plate.

16. (Previously Presented) A plasma processing apparatus according to Claim 13, wherein said plate is grounded.

17. (Previously Presented) A plasma processing apparatus according to Claim 12, wherein a radius R_d of lower face of said trapezoidal form and a height H from said sample stage to the upper face have a relation such that $H / R_d \leq 1$.

18. (Previously Presented) A plasma processing apparatus according to Claim 12, wherein a radius R_u of the upper face and a radius R_d of the lower face and a height H from said sample stage to the upper face have a relation such that $\tan^{-1}\{(R_d-R_u)/H\} \geq 5$.

19. (New) A plasma processing apparatus according to Claim 12, wherein said discharge outlet is positioned below said inclined side wall member.

20. (New) A plasma processing apparatus according to Claim 19, wherein the discharge outlet, positioned below said inclined side wall member, is at a side of said plasma processing apparatus.

21. (New) A plasma processing apparatus according to Claim 12, wherein said discharge outlet is located at a side of the plasma processing apparatus.